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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/810,377
Filing Date: March 26, 2004
Appellant(s): TABOR, KEITH A.

George E. Haas
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12 September 2007 appealing from the Office action mailed 07 March 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,332,517	Igarashi et al.	10-1979
6,374,153	Brandt et al.	03-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-7, 9-13, 15-18 and 20-28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S Patent No. 6,374,153 (hereinafter Brandt).

2. Claims 8, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandt in view of U.S. Patent No. 4,332,517 (hereinafter Igarashi).

3. The following ground(s) of rejection are applicable to the appealed claims and were set forth in the Final Office Action mailed 07 March 2007, reproduced for completeness below:

Claims 1-7, 9-13, 15-18 and 20-28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S Patent No. 6,374,153 (hereinafter Brandt).

As per claim 1, Brandt discloses a method for controlling movement of a member wherein an angle of the member with respect to a reference is alterable by a first actuator and a length of the member is alterable by a second actuator, the method comprises:

producing a command which designates a desired velocity that a point on the member is to travel along a desired substantially straight line path (col. 3, lines 20-23 and col. 4, lines 5-10);

transforming the command into a desired first velocity of the first actuator (col. 3, lines 58-61, col. 4, lines 40-44 and Fig. 1, element 140);

transforming the command into a desired second velocity of the second actuator (col. 3, lines 58-61, col. 4, lines 40-44 and Fig. 1, element 150);

operating the first actuator in response to the desired first velocity to alter the angle of the member (col. 2, lines 58-60, col. 4, lines 37-44, col. 7, lines 64 and 66-67 and col. 8, lines 1-5); and

operating the second actuator based on the desired length velocity to alter the length of the member (col. 2, lines 60-63, col. 4, lines 37-44, col. 7, lines 65-67 and col. 8, lines 1-2 and 6-8).

As per claim 2, Brandt discloses producing a command comprises designating a first desired velocity that a point on the member is to travel along a first axis (col. 3, lines 16-19 and 23-26 and col. 7, lines 8-12).

As per claim 3, Brandt discloses producing a command comprises:

designating a first desired velocity that a point on the member is to travel along a first axis (col. 3, lines 16-19 and lines 23-26 and col. 7, lines 8-12); and

designating a second desired velocity that the point on the member is to travel along a second axis that is orthogonal to the first axis (col. 3, lines 16-19 and lines 20-23 and col. 7, lines 8-12 and 57-61).

As per claim 4, Brandt discloses transforming the command into a desired first velocity of the first actuator comprises:

transforming the command into a desired angular velocity for the member (col. 3, lines 16-19 and 58-61 and col. 4, lines 4-13); and

converting the desired angular velocity into the desired first velocity (col. 4, lines 37-44).

As per claim 5, Brandt discloses a method for controlling movement of a member wherein an angle of the member with respect to a reference is alterable by a first actuator and a length of the member is alterable by a second actuator, the method comprises:

producing a command which designates a desired velocity that a point on the member is to travel along a desired substantially straight line path (col. 3, lines 20-23 and col. 4, lines 5-10);

transforming the command into a desired angular velocity and a desired length velocity for the member (col. 3, lines 58-61, col. 4, lines 4-13 and 40-44);

converting the desired angular velocity for the member into a desired first velocity of the first actuator (col. 3, lines 58-61, col. 4, lines 40-44 and Fig. 1, element 140);

operating the first actuator (Fig. 1, element 140) in response to the desired first velocity to alter the angle of the member (col. 2, lines 58-60, col. 4, lines 37-44, col. 7, lines 64 and 66-67 and col. 8, lines 1-5); and

operating the second actuator (Fig. 1, element 150) based on the desired length velocity to alter the length of the member (col. 2, lines 60-63, col. 4, lines 37-44, col. 7, lines 65-67 and col. 8, lines 1-2 and 6-8).

As per claim 6, Brandt discloses producing a command comprises designating a first desired velocity that the point on the member is to travel along a first axis (col. 3, lines 16-19 and 23-26 and col. 7, lines 8-12).

As per claim 7, Brandt discloses producing a command comprises:

designating a first desired velocity that the point on the member is to travel along a first axis (col. 3, lines 16-19 and 23-26 and col. 7, lines 8-12); and

designating a second desired velocity that the point on the member is to travel along a second axis that is orthogonal to the first axis (col. 3, lines 16-23 and col. 7, lines 8-12).

As per claim 9, Brandt discloses transforming the command utilizes the angular position of the member which is derived by sensing a dimension of the first actuator (col. 3, lines 28-33, col. 4, lines 4-10 and 14-17, col. 7, line 7, Fig. 1, element 140 and Fig. 2, element 210 and 220) and converting that position into the angular position of the member (col. 4, lines 37-44).

As per claim 10, Brandt discloses transforming the command utilizes the length of the member which is derived by sensing a dimension of the second actuator (col. 3, lines 28-30 and 34-37, col. 4, lines 4-10 and 14-17, col. 7, line 7, Fig. 1, element 150

and Fig. 2, element 210 and 230) and converting that dimension into the length of the member (col. 4, lines 37-44).

As per claim 11, Brandt discloses converting the desired length velocity for the member into a second velocity of the second actuator (col. 3, lines 58-61, col. 4, lines 40-44 and Fig. 1, element 150), wherein operating the second actuator is in response to the second velocity (col. 2, lines 60-63, col. 4, lines 37-44, col. 7, lines 65-67 and col. 8, lines 1-2 and 6-8).

As per claim 12, Brandt discloses the method as set forth above further comprising:

sensing a first parameter of the machine to produce a first signal denoting the angle of the member relative to a reference (col. 3, lines 31-33 and Fig. 2, element 210 and 220);

sensing a second parameter of the machine to produce a second signal denoting the length of the member (col. 3, lines 34-37 and Fig. 2, element 230);

deriving an actual angular velocity of the member from the first signal (col. 4, lines 18-23); and

deriving an actual length velocity of the member from the second signal (col. 4, lines 18-20 and 23-25).

As per claim 13, Brandt discloses the method as set forth above further comprising:

generating a first error value corresponding to a difference between the actual angular velocity and the desired angular velocity (col. 4, lines 31-34 and Fig. 3, element 360);

generating a second error value corresponding to a difference between the actual length velocity and the desired length velocity (col. 4, lines 31-34 and Fig. 3, element 360);

adjusting the desired angular velocity in response to the first error value to produce a corrected desired angular velocity which is employed in operating the first actuator (col. 4, lines 35-44 and Fig. 1, element 140); and

adjusting the desired length velocity in response to the second error value to produce a corrected desired length velocity which is employed in operating the second actuator (col. 4, lines 35-44 and Fig. 1, element 150).

As per claim 15, Brandt discloses sensing a first parameter senses a dimension of the first actuator (col. 3, lines 31-33, col. 4, lines 18-23 and 40-44 and Fig. 2, element 220).

As per claim 16, Brandt discloses sensing a first parameter senses the angle of the member relative to a reference (col. 3, lines 31-33).

As per claim 17, Brandt discloses sensing a second parameter of the machine senses a dimension of the second actuator (col. 3, lines 28-30 and 34-37, col. 4, lines 18-20 and lines 23-25 and Fig. 2, element 230).

As per claim 18, Brandt discloses the method as set forth above further comprising:

sensing a first parameter of the first actuator (col. 3, lines 31-33, col. 4, lines 18-23 and col. 40-44 and Fig. 2, element 220);

sensing a second parameter of the second actuator (col. 3, lines 34-37, col. 4, lines 18-20 and lines 23-25 and Fig. 2, element 230);

in response to the first parameter, deriving an actual velocity of the first actuator (col. 4, lines 18-23);

in response to the second parameter, deriving an actual velocity of the second actuator (col. 4, lines 18-20 and lines 23-25);

generating a first error value corresponding to a difference between the actual velocity of the first actuator and the desired first velocity (col. 4, lines 31-34 and Fig. 3, element 360);

generating a second error value corresponding to a difference between the actual velocity of the second actuator and the desired second velocity (col. 4, lines 31-34 and Fig. 3, element 360);

adjusting the desired first velocity in response to the first error value to produce a result which is used in operating the first actuator (col. 4, lines 35-44 and Fig. 1, element 140); and

adjusting the desired second velocity in response to the second error value to produce another result which is used in operating the second actuator (col. 4, lines 35-44 and Fig. 1 element 150).

As per claim 20, Brandt discloses a method for controlling movement of a member, wherein an angle of the member with respect to a reference is alterable by a first actuator and the member has a first section that extends from a second section by an amount that is varied by a second actuator, the method comprises:

designating a first desired velocity that a point on the member is to travel along a first axis (col. 3, lines 16-19 and 23-26 and col. 7, lines 8-12);

designating a second desired velocity that a point on the member is to travel along a second axis which is orthogonal to the first axis (col. 3, lines 16-19 and 20-23 and col. 7, lines 8-12 and 57-61);

sensing a first parameter that indicates a position of the member (col. 3, lines 31-33, col. 4, lines 14-17 and Fig. 1, element 210 and 220);

deriving an angular position of the member from the first parameter (col. 4, lines 18-23);

sensing a second parameter that indicates an amount that the first section extends from the second section (col. 3, lines 34-37 and Fig. 1, element 230);

deriving a length of the member from the second parameter (col. 4, lines 18-20 and 23-25);

transforming the first and second desired velocities into a desired angular velocity and a desired length velocity for the member (col. 3, lines 58-61, and col. 4, lines 4-13 and 40-44), wherein that transforming is based on the angular position and the length of the member (col. 4, lines 4-13);

converting the desired angular velocity for the member into a desired first velocity of the first actuator (col. 5, lines 1-13);

operating the first actuator in response to the desired first velocity to alter the angle of the member (col. 2, lines 58-60, col. 4, lines 37-44, col. 7, lines 64 and 66-67 and col. 8, lines 1-5); and

operating the second actuator based on the desired length velocity to alter the length of the member (col. 2, lines 60-63, col. 4, lines 37-44, col. 7, lines 65-67 and col. 8, lines 1-2 and 6-8).

As per claim 21, Brandt discloses sensing a second parameter comprises sensing a dimension of the second actuator (col. 3, lines 28-30 and 34-37, col. 4, lines 37-44, col. 7, line 7, Fig. 1, element 150 and Fig. 2, element 210 and 230).

As per claim 22, Brandt discloses converting the desired angular velocity comprises:

deriving an actual angular velocity of the member from the first parameter (col. 4, lines 18-23);

generating first error value corresponding to a difference between the actual angular velocity and the desired angular velocity (col. 4, lines 31-34 and Fig. 3, element 360); and

adjusting the desired angular velocity in response to the first error value to produce a corrected desired angular velocity which is employed in operating the first actuator (col. 4,lines 35-44 and Fig. 1, element 140).

As per claim 23, Brandt discloses operating the second actuator comprises converting the desired length velocity for the member into a desired second velocity for the second actuator (col. 4, lines 37-44 and Fig. 1, element 150).

As per claim 24, Brandt discloses converting the desired length velocity comprises:

deriving an actual length velocity of the member from the second parameter (col. 4, lines 18-20);

generating second error value corresponding to a difference between the actual length velocity and the desired length velocity (col. 4, lines 31-34); and

adjusting the desired length velocity in response to the second error value to produce a corrected desired length velocity which is employed in operating the second actuator (col. 4, lines 35-44 and Fig. 1, element 150).

As per claim 25, Brandt discloses a control system for a member which is movable by first and second actuators that respectively control an angle of the member relative to a reference and a length of the member, the control system comprising:

an input apparatus (Fig. 2, element 270) that produces a command designating a desired velocity of a point on the member along a desired substantially straight line path (col. 3, lines 20-23 and col. 4, lines 5-10);

a transformation function coupled to the input apparatus and converting the command into an angular velocity (col. 3, lines 58-61 and col. 4, lines 40-44) and a length velocity for the member (col. 3, lines 58-61 and col. 4, lines 40-44);

a first converter which translates the angular velocity for the member into a first velocity at which the first actuator is to move (col. 3, lines 58-61, col. 4, lines 40-44 and Fig. 1, element 140);

a first driver for operating the first actuator in response to the first velocity to alter the angle of the member (col. 2, lines 58-60, col. 4, lines 37-44, col. 7, lines 64 and 66-67 and col. 8, lines 1-5); and

a control element (Fig. 2, element 250) for operating the second actuator in response to the length velocity to alter the length of the member (col. 2, lines 60-63, col. 3, lines 50-55, col. 4, lines 37-44, col. 7, lines 65-67 and col. 8, lines 1-2 and 6-8).

As per claim 26, Brandt discloses command produced by the input apparatus designates a first desired velocity along a first axis and a second desired velocity along a second axis that is substantially orthogonal to the first axis (col. 3, lines 16-26 and col. 7, lines 8-12 and 57-61).

As per claim 27, Brandt discloses the control element comprises:

a second converter which translates the length velocity for the member into a second velocity at which the second actuator is to move (col. 3, lines 58-61, col. 4, lines 40-44 and Fig. 1, element 140); and

a second driver for operating the second actuator in response to the second velocity to alter the length of the member (col. 2, lines 60-63, col. 4, lines 37-44, col. 7, lines 65-67 and col. 8, lines 1-2 and 6-8).

As per claim 28, Brandt discloses the control system as set forth above further comprising:

a first sensor (Fig. 2, element 210 and 220) that produces a first signal indicating a first parameter which denotes the angle of the member relative to a reference (col. 3, lines 31-33);

a second sensor (Fig. 2, element 210 and 230) producing a second signal that denotes the length of the member (col. 3, lines 34-37);

a first differentiator that derives an actual angular velocity of the member from the first signal (col. 4, lines 18-20);

a second differentiator that derives an actual length velocity of the member from the second signal (col. 4, lines 18-20);

an angle controller which generates first error value corresponding to a difference between the actual angular velocity and the desired angular velocity (col. 4, lines 31-34 and Fig. 3, element 360);

a length controller which generates second error value corresponding to a difference between the actual length velocity and the desired length velocity (col. 4, lines 31-34 and Fig. 3, element 360);

a first adjusting element that alters the desired angular velocity in response to the first error value to produce a corrected desired angular velocity which is applied to the first converter (col. 4, lines 35-44); and

a second adjusting element that alters the desired length velocity in response to the second error value to produce a corrected desired length velocity which is employed by the control element in operating the second actuator (col. 4, lines 35-44).

Claim 8, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandt in view of U.S. Patent No. 4,332,517 (hereinafter Igarashi).

As per claim 8, Brandt does not expressly teach to transforming the command utilizes the relationships defined by the equations:

[dot over (X)]=cos(.theta.+.gamma.)[dot over (L)]+(-L sin(.theta.+.gamma.)+ d cos(.theta.+.gamma.))([dot over (.theta.)]+[dot over (.gamma.)]) [dot over (Y)]=sin(.theta.+.gamma.)[dot over (L)]+(L cos(.theta.+.gamma.)+ d sin(.theta.+.gamma.))([dot over (.theta.)]+[dot over (.gamma.)]) where [dot over (X)] is velocity of the point on the member along the first axis, [dot over (Y)] is velocity of the point on the member along the second axis, .theta. is the angle of the member, [dot over (.theta.)] is the angular velocity of the member, .gamma. is a pitch angle of a machine on which the member is mounted, [dot over (.gamma.)] is an angular pitch velocity of the machine, [dot over (L)] is a rate at which the length of the member is changing, and d is a distance that the point is offset from a longitudinal axis of the member.

Igarashi teaches to using a transforming command (col. 1, 57-63. lines col. 5, lines 1-67 and col. 6, lines 1-35).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Brandt to include transforming the command to improve the stability, accuracy and response to the feedback control system (col. 6, lines 58-59).

As per claim 14, Brandt does not expressly teach generating a first error value and generating a second error value both utilize a proportional-integral-derivative control function.

Igarashi teaches to using a PID controller (col. 6, lines 60-61).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Brandt to include a PID controller to improve the stability, accuracy and response to the feedback control system (col. 6, lines 58-59).

As per claim 19, Brandt does not expressly teach generating a first error value and generating a second error value both utilize a proportional-integral-derivative control function.

Igarashi teaches to using a PID controller (col. 6, lines 60-61).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Brandt to include a PID controller to improve the stability, accuracy and response to the feedback control system (col. 6, lines 58-59).

(10) Response to Argument

Appellant's arguments (regarding VII. Argument), filed on 12 September 2007, have been fully considered but are not persuasive.

A. Claims 1-7, 9-13, 15 and 20-28 Are Not Anticipated By Brandt *et al.* Under 35 U.S.C. §102

a. In response to Appellant's argument that the reference fails to teach "transforming the command into a desired first velocity of the first actuator which pivots the member" (see Brief, pg. 8, paragraph 1) of Appellant's invention; the Examiner respectfully disagrees.

In response to Appellant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "***pivots*** the member") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are

not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, Brandt discloses (col. 2, lines 58-60), "The angle of the boom 160 with respect to the frame 130 is controlled by a first actuator 140 connected between the frame 130 and the boom 160."

(col. 4, lines 37-44), "The desired velocity requests, represented in Cartesian coordinates, are **transformed** at control box 370 into corresponding polar coordinates based on the position and orientation of the boom 160. The output of the Cartesian to polar transform control box 370 is the desired angular velocity of the boom 160, which is controlled by the first actuator 140, and the desired linear velocity of the boom 160, which is controlled by the second actuator 150."

(col. 7, lines 66-67 and col. 8, lines 1-2), "wherein the control system is adapted for actuating the first actuator and the second actuator as a function of the desired angular velocity and the desired linear velocity, respectively."

(col. 8, lines 3-5), "An apparatus, as set forth in claim 10, wherein the first actuator is adapted for controlling an angle of the boom relative to the frame."

In summary, Brandt discloses the transformation of the input command into a desired first velocity that is controlled by the first actuator to control the angle of the boom. Hence, the prior art meets Appellant's claimed limitation, "transforming the command into a desired first velocity of the first actuator which pivots (alters) the member."

b. In response to Appellant's argument that the reference does not "indicate the absolute amount of flow to each actuator" and "flow percentage does not correspond to a desired velocity of the first actuator 140 that pivots the boom 160" (see Brief, pg. 8, paragraph 3 and pg. 9, paragraph 1) of Appellant's invention; the Examiner respectfully disagrees.

As previously indicated in the Final Office Action, mailed 07 March 2007 (see Response to Arguments, pg. 21, paragraph 43), there is no mention of these limitations in the claims, and the Specification is not the measure of the invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art; see In re Sprock, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968).

Furthermore, Brandt discloses (col. 4, lines 64-67), "Preferably, the desired and actual velocity ratios represent the desired and actual velocities of the first actuator 140, relative to the desired and actual velocities of the second actuator 150."

c. In response to Appellant's argument that "nothing in the cited patent derives a desired velocity for the first actuator 140" (see Brief pg. 9, paragraph 2); the Examiner respectfully disagrees.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "**derives a desired velocity** for the first actuator) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As previously indicated in the Final Office Action, mailed 07 March 2007 (see Response to Arguments, pgs. 25-26, par. 47), Brandt discloses (col. 4, lines 37-44) "The desired velocity requests, represented in Cartesian coordinates, are transformed at control box 370 into corresponding polar coordinates based on the position and orientation of the boom 160. The output of the Cartesian to polar transform control box 370 is the desired angular velocity of the boom 160, which is controlled by the first actuator 140, and the desired linear velocity of the boom 160, which is controlled by the second actuator 150."

(col. 7, line 64), "a first actuator associated with the boom;"

(col. 7, lines 66-67 and col. 8, lines 1-2), "wherein the control system is adapted for actuating the first actuator and the second actuator as a function of the desired angular velocity and the desired linear velocity, respectively."

(col. 8, lines 3-5), "An apparatus, as set forth in claim 10, wherein the first actuator is adapted for controlling an angle of the boom relative to the frame."

(col. 4, lines 64-67), "Preferably, the desired and actual velocity ratios represent the desired and actual velocities of the first actuator 140, relative to the desired and actual velocities of the second actuator 150."

d. In response to Appellant's argument that "Nowhere in the reference is a dimension of an actuator sensed for this length determination" (see Brief pg. 9, paragraph 4); the Examiner respectfully disagrees.

As previously indicated in the Final Office Action, mailed 07 March 2007, (see Response to Arguments, pgs. 26-27, par. 48), Brandt discloses (col. 3, lines 34-37) "The position sensor 210 also includes a length sensor 230 adapted for sensing the

length or extension of the telescopic member 170 of the boom 160, and responsively delivering a boom length signal."

(col. 4, lines 4-10) "Referring now to FIG. 3, a block diagram of the control system 240 is shown. The input commands, which are generated by the input device 270, are shown as desired velocity requests. The input commands are in Cartesian coordinates, and represent the desired x and y velocity of the boom 160 corresponding to the desired speed and direction of movement of the fork 180."

(col. 4, lines 14-17) "An actual position of the load-engaging member 180 is determined at control box 320 as a function of the boom angle signal, the boom length signal, and the inclination signal."

e. In response to Appellant's argument that the reference fails to teach "deriving the actual boom angle by sensing a dimension of the first actuator 140" (see Brief, pg. 10, paragraph 1) of Appellant's invention; the Examiner respectfully disagrees.

As previously indicated in the Final Office Action, mailed 07 March 2007, (see Response to Arguments, pgs. 27-28, par. 49), Brandt discloses (col. 3, lines 31-33) "The position sensor 210 includes an angle sensor 220 adapted for sensing the angle of

the boom 160 relative to the frame 130, and responsively delivering a boom angle signal."

(col. 4, lines 4-10) "Referring now to FIG. 3, a block diagram of the control system 240 is shown. The input commands, which are generated by the input device 270, are shown as desired velocity requests. The input commands are in Cartesian coordinates, and represent the desired x and y velocity of the boom 160 corresponding to the desired speed and direction of movement of the fork 180."

(col. 4, lines 14-17) An actual position of the load-engaging member 180 is determined at control box 320 as a function of the boom angle signal, the boom length signal, and the inclination signal.

f. In response to Appellant's argument that "nothing in the reference senses a dimension of the second actuator" (see Brief pg. 10, paragraph 2); the Examiner respectfully disagrees.

As previously indicated in the Final Office Action, mailed 07 March 2007 (see Response to Arguments, pgs. 28-29, par. 50), Brandt discloses (col. 3, lines 34-37), "The position sensor 210 also includes a length sensor 230 adapted for sensing the length or extension of the telescopic member 170 of the boom 160, and responsively delivering a boom length signal."

(col. 4, lines 4-10), "Referring now to FIG. 3, a block diagram of the control system 240 is shown. The input commands, which are generated by the input device 270, are shown as desired velocity requests. The input commands are in Cartesian coordinates, and represent the desired x and y velocity of the boom 160 corresponding to the desired speed and direction of movement of the fork 180."

(col. 4, lines 14-17), "An actual position of the load-engaging member 180 is determined at control box 320 as a function of the boom angle signal, the boom length signal, and the inclination signal."

g. In response to Appellant's argument that the reference fails to teach "deriving an actual velocity of the actuator 140 that produces an angular change of the boom" (see Brief, pg. 10, paragraph 3) of Appellant's invention; the Examiner respectfully disagrees.

As previously indicated in the Final Office Action, mailed 07 March 2007 (see Response to Arguments, pg. 29, par. 51), Brandt discloses (col. 4, lines 18-23), "The actual position of the load-engaging member 180 is transformed at control box 330 into an actual angular velocity and an actual linear velocity. More specifically, the actual

angular velocity is determined by computing the derivative of the boom angle signals, as sensed by the angle sensor 220."

h. In response to Appellant's argument that the reference fails to teach "sens(ing) a dimension of an actuator" (see Brief, pg. 11, paragraph 1) of Appellant's invention; the Examiner respectfully disagrees.

As previously indicated in the Final Office Action, mailed 07 March 2007 (see Response to Arguments, pgs. 30-31, par. 53), Brandt discloses (col. 3, lines 34-37) "The position sensor 210 also includes a length sensor 230 adapted for sensing the length or extension of the telescopic member 170 of the boom 160, and responsively delivering a boom length signal."

(col. 4, lines 4-10) "Referring now to FIG. 3, a block diagram of the control system 240 is shown. The input commands, which are generated by the input device 270, are shown as desired velocity requests. The input commands are in Cartesian coordinates, and represent the desired x and y velocity of the boom 160 corresponding to the desired speed and direction of movement of the fork 180."

(col. 4, lines 14-17), "An actual position of the load-engaging member 180 is determined at control box 320 as a function of the boom angle signal, the boom length signal, and the inclination signal."

i. In response to Appellant's argument "Nothing in that patent defines a velocity at which the first actuator 140 is to move" (see Brief, pg. 11, paragraph 2); the Examiner respectfully disagrees.

Brandt discloses (col. 4, lines 37-44), "The desired velocity requests, represented in Cartesian coordinates, are transformed at control box 370 into corresponding polar coordinates based on the position and orientation of the boom 160. The output of the Cartesian to polar transform control box 370 is the desired angular velocity of the boom 160, which is controlled by the first actuator 140, and the desired linear velocity of the boom 160, which is controlled by the second actuator 150."

(col. 7, line 64), "a first actuator associated with the boom;"

(col. 7, lines 66-67 and col. 8, lines 1-2), "wherein the control system is adapted for actuating the first actuator and the second actuator as a function of the desired angular velocity and the desired linear velocity, respectively."

(col. 8, lines 3-5), "An apparatus, as set forth in claim 10, wherein the first actuator is adapted for controlling an angle of the boom relative to the frame."

B. Claims 8, 14 and 19 Are Patentable Under 35 U.S.C. §103 Over Brandt et al. in View of Igarashi et al.

a. In response to Appellant's argument "The dissimilar components and dramatically different motion of the two machines make the equations for Igarashi excavator inapplicable to the Brandt *et al.* telehandler" (see Brief, pg. 11, paragraph 2); the Examiner respectfully disagrees. The Examiner has interpreted Appellant's argument as commensurable to a nonanalogous art argument.

In response to applicant's argument that the prior art of Igarashi and Brandt is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Igarashi and Brandt both relate to control of a work implement of a work machine.

b. In response to Appellant's argument "the specific equation contained in

claim 8 are significantly different from the equation recited in the Igarashi, *et al.* patent" (see Brief, pg. 11, paragraph 2); the Examiner respectfully disagrees.

The specific equation of claim 8 is not given much patentable weight since the claimed equation discloses substantially the same method and result of the prior art.

(11) Evidence Appendix

The Appellant has not submitted any evidence.

(12) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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